

Administrative Order CWA-03-2009-0313DN

Five-Year Summary of Activities

Respondent: **Borough of Emmaus**

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[update based on report]

Section 1: Progress Toward System Characterization

[Use each row in the tables in this section to describe the activities performed to characterize the system. Add or delete rows as necessary, if information regarding studies or results has not yet been presented to EPA, include that information in an appendix.]

Table 1-1: Flow Monitoring and Rehabilitation Effectiveness	
Flow Metering	There is a permanent flow meter in place in each of the Borough of Emmaus sewer system's four drainage basins. Flow totals at each meter are recorded daily.
Rehabilitation Effectiveness Metering	
Rehabilitation Effectiveness Results	Impacts of sewer maintenance and precipitation are evaluated and reported in annual Chapter 94 reporting.
Model Recalibration Metering	The Borough does not have a sewer system flow model.

[Include any SSES activities performed to date, add or delete rows as needed]

Table 1-2: Sanitary Sewer Evaluation Study Summary			
SSES Activities	SSES Activity	Catchments Completed	Catchments Identified for SSES
	Nighttime Weiring		
	Smoke Testing		
	Basement Inspections	All Catchments - 3856 properties	
	Above Grade Storm Water		
	Other:		
	Other:		
Manhole Inspections			
CCTV Inspections	<p>The Borough of Emmaus sewer system includes approximately 47.1 miles of sewers in four metered drainage basins. The Borough has been conducting CCTV inspections of its sanitary sewer system since before the year 2000, but records prior to 2003 are incomplete. Since 2003, Basins 1 and 3 have been fully inspected and the inspection of Basin 4 is approximately 37% complete. These inspections have included 14.4 miles or about 30% of the Borough's sewer lines. Inspections of select areas in the balance of Basin 4 and Basin 2 are anticipated over the next 5 years.</p>		

[Include information about any system modeling done to date, add or delete rows as needed.]

Table 1-3: Hydraulic Modeling	
Model Development	N.A.
Level of Service Analyses	N.A.
Current System Upsizing	N.A.

[Include any other engineering activities that have occurred since the AO was issued.
Examples include AO planning, workplans, trainings, studies, etc.]

Table 1-4: Other Engineering Activities	

Section 2: Progress Toward Eliminating Inflow

[Provide information on inflow sources removed, quantify sources removed to date. The page can be adjusted to landscape to make information fit. Add or delete rows or columns as needed.]

Table 2-1: Inflow Sources Removed					
Number of Basement Disconnections	Number of Manhole Dishes Installed	Number of Manhole Frame and Covers Reset/Replaced	Cleanout Repair / Cap Replacement	Roof Drains Disconnected	Other Lateral Repairs
168	*	**	55	87	39
[Include notes if needed] Inspected 3856 of 3860 properties over the 8-year period between 2006 and 2014.					

* Records for purchase and installation of manhole dish inserts are incomplete. The Borough of Emmaus Public Works Department is aware of at least 60 manhole dish inserts having been purchased for the system, but the exact number and locations of inserts currently in place cannot be confirmed at this time. Tracking of the insert locations will be updated with periodic manhole inspection observations.

** Sewer system manhole frames are re-set to match finished street grade and cross-slope whenever street pavement overlay/reconstruction work is performed. The exact number of re-set frames is not known.

Section 3: Progress Toward Eliminating Infiltration

[Provide information on infiltration sources removed, quantify sources removed to date. The page can be adjusted to landscape to make information fit. Add or delete rows or columns as needed.]

Table 3-1: Infiltration Sources Removed					
Number of Manhole Chimney Seals Repaired	Number of Manholes Lined	Number of Manholes Grouted	Cured-in-Place Pipe Line (LF)	Lateral Replacement (to Right-of-way)	Sewer Line Replacement (LF)
0	0	0	874	0	20
Number of Pipe Joints Sealed with Grout	Number of Pipe Joint Sleeve Repairs				
*	14				

* The number of pipe joints sealed with grout is not known. The Borough's older sewer mains are generally 5-foot sections of VCP. Approximately 24,900 feet of sewer mains were air-tested at joints and, where needed, pressure-grouted to seal leaks. Approximately 4,650 gallons of grout were utilized for these joint repairs.

Section 4: Other Related Projects

[Include any other projects related to the AO that were not outlined above. Add or delete rows as needed.]

Table 4-1: Other Related Projects	
Sewer Basin 1	Contracted for TV inspection and pipe joint grouting of entire basin, consisting of approximately 11,357 feet of 8" pipe (mostly VCP). Also resulted in one open cut pipe repair.
Sewer Basin 2	This basin to be inspected after completion of Basin 4. (See below.)
Sewer Basin 3	Contracted for TV inspection and pipe joint grouting of entire basin, consisting of approximately 14,495 feet of 8" pipe (mostly VCP).
Sewer Basin 4	Contracted for TV inspection of 50,092 feet of 8" pipe in 5 of 9 sub-basins, including selective pipe joint grout repair. Also resulted in CIPP lining of multiple pipe sections, numerous spot repairs, and one open cut pipe repair. Additional sub-basins to be inspected in coming years.

Section 5: Progress Toward Cooperative Management of Flows

[Include any information about cooperation with other utilities under the AO, examples include partnerships, meetings, joint operations, etc. Add or delete rows as needed.]

Table 5-1: Progress Toward Cooperative Management of Flows	
	Borough representatives have attended progress meetings with City of Allentown, Lehigh County Authority, and other signatory representatives to share experiences in I&I investigation and remediation activities.

Section 6: Funding

[Include costs of meeting the AO to date and anticipated future costs.]

Table 6-1: Financial Reports	
Cost of AO to Date	The Borough's routine sewer main CCTV and pipe rehabilitation program from 2003 to 2013 has involved a total cost, adjusted to present value, of about \$302,000. The Borough's customer facility inspection program from 2006 to 2013 has involved a total cost, adjusted to present value, of about \$152,000.
Anticipated Costs to Eliminate SSOs	The estimated cost for completion of CCTV inspection and repairs in the remaining 32.7 miles of Borough sewer mains is about \$685,000. No estimate is currently available for possible manhole inspection and rehabilitation costs.

Section 7: Future Activities

[Include all activities remaining that will need to be completed to eliminate SSOs and meet the AO requirements. Include a schedule for these activities. Add or delete rows as needed.]

Table 7-1: Future Activities and Schedule	
Activity	Estimated Completion Date
The Borough's CCTV inspection program is expected to continue in the remaining portions of Basins 4 and 2.	5-year plan
It is anticipated that a manhole inspection pilot study will be performed to determine if a larger scale program is needed to help reduce the inflow component in the sewer system.	2016